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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,473	12/29/2004	Tetsuya Kamihara	040302-0427	2688

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EXAMINER	
SUITTE, BRYANT P	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
02/23/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/519,473	KAMIHARA, TETSUYA	
	Examiner	Art Unit	
	BRYANT SUITTE	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FUEL CELL SYSTEM

Examiner: Suitte 10/519,473 February 6, 2009

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 5, 2008 has been entered. Claim 13 is amended.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on August 5, 2008.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

4. The claims rejections under 35 U.S.C. 102(b) as being anticipated by Simpson et al. (US 2004/0161657) on claims 1 and 3-13 are withdrawn because applicant's argument was found persuasive.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1 and 3-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson et al. (US 2004/0161657).

Regarding claim 1, Simpson teaches a fuel cell system that generates power from a supplied fuel supply system that utilizes a recirculation system for recirculation of unused fuel gas that contains nitrogen inside the recirculation system. Furthermore, the system comprises a purge valve for purging nitrogen contained in the recirculation system, also a controller for adjusting a purge valve to maintain a constant concentration of nitrogen. Simpson discloses a controller the operates the hydrogen purge device (72) opens and purges the anode exhaust from the fuel cell for a certain period of time and at certain intervals to prevent the fuel cell from flooding (increasing the calve opening of the purge valve). This recovers the flooded cell and cell voltage will then increase. The cell voltages increase beyond a second value (threshold), the controller closes the hydrogen purge device and returns the fuel cell system to a stable operation (reducing the valve opening of the purge valve). See paragraph 46. The hydrogen purge operation allows fresh hydrogen to be introduced into the fuel cell, which is control by a flow regulating device (22) that permits the flow of hydrogen from the hydrogen source to the fuel cell. See paragraph 33. The flow regulating device

comprises set points (threshold set of gas for operation of fuel cell) that permit hydrogen to be supplied to the fuel cell when the pressure is below the set point due to the consumption of hydrogen in the fuel cell. See paragraph 33. Simpson teaches a fuel cell system that comprising a controller that monitors and controls the hydrogen purge device to open and close the hydrogen purge device for a certain period of time and at certain intervals, which is equivalent to adjust the valve opening of the purge valve to maintain a flow rate of fuel in a fuel gas passing through the purge valve. See paragraph 26 and 46. Simpson does not provide an identical method of maintaining a nitrogen concentration in a fuel cell system per se. However, Simpson discloses a method for maintaining a nitrogen concentration at a specified threshold in a fuel cell system controlled by adjusting the purge valve of the fuel cell system to discard anode exhaust comprising nitrogen. Therefore, it would have been obvious to one having ordinary skill in the art that Simpson discloses a method to maintain a nitrogen concentration because Simpson discloses that the purging of the anode exhaust allows "fresh" hydrogen to be introduced into the fuel cell thereby more oxidant is introduced into the fuel cell, decreasing flooding in the fuel cell thereby increasing the cell voltage and operation of the fuel cell. See paragraph 46.

Regarding claim 3, Simpson teaches a fuel cell system that adjusts the valve or flow regulating device that permits the flow of hydrogen from the hydrogen source to the fuel cell based upon set points or thresholds of the system. See paragraph 33.

Regarding claim 4, Simpson teaches a sensor that measures the temperature of the fuel gas and adjusts the temperature of the fuel gas to be supplied to the fuel cell system. See paragraph 36 and 37.

Regarding claim 5, Simpson teaches regulators that detect the pressure of the fuel gas in the supply system, which allows for the operation of the fuel cell system with the fuel supplied at different pressures without interrupting the operation of fuel cell system. Therefore, one of ordinary skill in the fuel cell art would recognize that the pressure threshold can be adjusted as needed. See paragraph 33.

Regarding claim 6, Simpson teaches a flow regulating device or valve that permits the flow of hydrogen from the hydrogen source to the fuel cell in response to the pressure drop in the fuel supply line. Therefore, one of ordinary skill in the fuel cell art would recognize that when the consumption rate of the fuel gas is elevated the pressure in the supply will decrease. See paragraph 33.

Regarding claim 7, Simpson teaches an blower or ejector provided in the recirculation system, to which supply system is connected; as stated in the above paragraph the pressure sensor for detecting supply pressure of the fuel gas supplied to the blower or ejector, wherein the supply rate of the fuel gas is based on the supply pressure detected by the pressure monitors. See paragraph 33.

Regarding claim 8, Simpson teaches a temperature monitoring system and pressure monitoring system that regulate the supply rate of the hydrogen from the hydrogen source to the fuel cell. See paragraph 33, 36 and 37.

Regarding claim 9, Simpson teaches a flow regulating device or valve in the fuel cell system to permit the flow of fuel gas from the fuel source to the fuel cell in response to the pressure drop in the fuel supply line. Therefore, one of ordinary skill in the fuel cell art can infer that the consumption rate of the fuel gas is based on the pressure of the fuel cell system. See paragraph 33.

Regarding claim 10, Simpson teaches a temperature monitoring system upstream of the pressure regulator(s); where a flow regulating device or valve in the fuel cell system to permit the flow of fuel gas from the fuel source to the fuel cell in response to the pressure drop in the fuel supply line. Therefore, it is inherent to one skilled in the art that the consumption rate of the fuel gas is based on the pressure of the fuel cell system of the that detects the temperature of the fuel cell system to permit the flow of fuel gas from the fuel source to the fuel cell in response to the pressure and temperature of the fuel cell system. See paragraph 33, 36 and 37.

Regarding claim 11, Simpson teaches an ammeter or a voltage monitor, which monitors the electronic signal of the fuel cell system that controls the amount of fuel gas and oxidant to the fuel cell. See paragraph 45, 46, and 50.

Regarding claim 12, Simpson teaches an ammeter or a voltage monitor, which monitors the pressure of the fuel cell, the electronic signal of the voltage monitor controls the speed and controls the hydrogen purge device which controls the amount of fuel gas and oxidant to the fuel cell, which is adjusted occurring to the variation of the pressure in the fuel cell system. See paragraph 45, 46, and 50.

Response to Arguments

7. Applicant's arguments filed November 5, 2008 have been fully considered but they are not persuasive. *Applicant's principle arguments are:*

a) The prior art does not does not maintain the nitrogen concentration in the anode exhaust in the recirculation line 60 at a target nitrogen concentration.

8. In response to Applicant's arguments, please consider the following comments.

a) The nitrogen concentration "maintained" at a target concentration disclosed by the instant application comprises a nitrogen concentration that adjusts or changes as the operation of the fuel cell increased. The threshold can be a small window, it can be concluded that the window is a fluctuation of the nitrogen concentration. The nitrogen concentration in the instant application is dependent upon the fuel cell operation which is similar to the prior art disclosed. The instant application fuel cell, similar to the prior art, is dependent upon operation. The higher the operation the more nitrogen buildup. Furthermore, the prior art discloses a purging of the nitrogen from the fuel cell when there is a buildup. The prior art also discloses a target nitrogen concentration. The target nitrogen concentration of the prior art is initiated at the start of the fuel cell. When purging occurs the fuel cell is maintaining at a "threshold" set by standard operation parameters of the fuel cell. Therefore, the prior art does not specifically disclose a target nitrogen concentration maintained at a threshold per se. It can be concluded that the prior art does disclose a target nitrogen concentration maintained at a threshold set by accordance with the operation conditions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYANT SUITTE whose telephone number is (571)270-3961. The examiner can normally be reached on Mon-Fri 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRYANT SUITTE/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795